

Preserving Delaware

Green Infrastructure

The term “Green Infrastructure” refers to an interconnected system of undeveloped lands that incorporates natural resource areas, recreational lands, and working lands. Large blocks of forests, rivers and streams, and farms are all examples of Green Infrastructure. Delaware’s Green Infrastructure serves as habitat for rare and endangered species, provides the basis for Delaware’s thriving agricultural industry, protects the quality of our air and water, provides places for Delawareans to enjoy the outdoors, and adds to the scenic quality of Delaware.

Multipurpose green space networks provide a framework for smart conservation and smart growth. Just as “built” infrastructure such as roads, water and electric are always carefully planned; so should “green infrastructure” be planned, designed, and invested in.

Through its Green Infrastructure subcommittee, the Livable Delaware Advisory Council has developed and approved preservation strategy for farmland and open space in Delaware.

The recommended goals for Green Infrastructure in Delaware:

- Preserve half of Delaware’s remaining, unpreserved commercially viable forest land by 2024.
- Preserve half of Delaware’s remaining, unpreserved cropland by 2024.
- Preserve 100% of the remaining natural resource and recreation priorities by 2024.

A healthy Green Infrastructure provides:

- Clean air and water
- Flood and erosion control
- Habitat
- Food and Fiber
- Scenic Vistas
- Invasive Species Management
- Quality of Life

The economics of Green Infrastructure encompass:

- **Agriculture & Forestry** — Healthy soils, pollinators and stable environmental conditions are essential for Delaware farmers

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to put food on the table. Production of Agricultural and Forestry products contributed \$800 million to Delaware's economy in 2002.

- **Physical fitness** — healthy people save public health dollars
- **Recreation** — Fishing, hunting, and wildlife watching activities brought in \$127 million into Delaware's economy in 2001.
- **Tourism** — In 2002, almost 5.9 million people visited Delaware State Parks. Healthy beaches, state parks, and wildlife areas means more visitors to Delaware.
- **Increased property values** — A network of green space used as a common area enhances a community.

The **Livable Delaware Advisory Council's Green Infrastructure Subcommittee** was charged with recommending strategies for conservation and management of natural resources, recreational lands, and working lands. They were also asked to work towards creating an interconnected network of green spaces. The final recommendations of the subcommittee, endorsed by the Livable Delaware Advisory Council are:

1. **Incorporate Green Infrastructure maps into the 2004 update of the Strategies for State Policies and Spending maps.** Use these maps to direct future state program investments and to guide local land use planning.
2. **Develop innovative landowner incentives to protect green infrastructure within growth areas.** Density Bonuses to encourage compact development, Transfer of Development Rights programs and Conservation Design Practices are examples of incentives that can be used.
3. **Enhance and expand existing state programs to protect forests and forested wetlands throughout Delaware.** Support the development of the forestland conservation program in the Dept. of Agriculture and request the Open Space Council to develop forest preservation corridors with the Forest Stewardship Committee.
4. **Support the Delmarva Conservation Corridor initiative. Secure increased matching funds, support**

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education on the ecological value that natural resources provide, and support Delmarva Conservation Corridor plan.

- 5. Adopt a 5-year goal to permanently protect 258,000 acres of natural resource and recreational lands and working lands.** Secure \$554 million, establish a stewardship fund, and create matching grants program for nonprofits.

Governor Minner proposed \$22 million in green infrastructure investments for Fiscal Year 2005 to begin implementing the Livable Delaware Advisory Council's recommendations.

Green Infrastructure serves as the umbrella under which many other State, local and private efforts for preserving Delaware's open space and farmlands fall.



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Strategies for Preserving Open Space and Farmland

Farmland preservation efforts focus on preserving a critical mass of agricultural land to ensure the health of the agriculture industry. They will also be used to develop permanent green edges around development areas by targeting farmlands at risk of development, promoting agribusiness activities, and preserving historic farmsteads and archeological sites.

Open-space investments should emphasize the protection of critical natural habitat and wildlife, aquifer recharge, sustainable agriculture and forestry activities, and increased acquisition of state forest lands. Open space investments will also provide for recreational activities, while helping to define growth areas.

Open Space Program

The Open Space Program was established by Title 7, Delaware Code, Chapter 75, the Delaware Land Protection Act. Delaware's Open Space Program was created on July 13, 1990 by the signing into law of the Land Protection Act and Subchapter II of the Realty Transfer Tax Act. The Division of Parks and Recreation in DNREC administers

the program. The Act established a 9-member Open Space Council that recommends specific land acquisition projects to the DNREC Secretary, based upon advice of an interagency working group. Funding sources for the acquisitions have included conservation revenue bonds, the 21st Century Fund, legislative appropriations, and the realty transfer tax.

Fortunately, a long term dedicated funding source for open space acquisition was acquired via passage of HB 192, Livable Delaware legislation passed during the first session of the 141st General Assembly. Under that legislation, the Open Space program is to be provided with \$9 Million annually for the next 17 years for open space purposes, a significant increase over the previous \$3 Million dollar funding level.

The Land Protection Act formalized a process for acquiring state conservation lands. According to the law, state agencies may acquire any interest in real property for the following purposes:

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The Open Space Program

- To protect and conserve all forms of natural and cultural resources.
- To protect and conserve biological diversity.
- To protect existing or planned parks, forests, wildlife areas, nature preserves or other recreation, conservation and cultural sites by controlling the use of contiguous or nearby lands.
- To preserve sites of special natural, cultural or geological interest.
- To connect existing open spaces into a cohesive system of greenways and resource areas.
- To provide for public outdoor recreation.
- To allow for water resource conservation.

According to the law, “It is the public policy of the state and its political subdivisions that the preservation of open spaces shall be accomplished through the acquisition of interests or rights in real property, or donation of said lands, and that said acquisition constitutes a public purpose for which public funds have been expended or advanced and should be continued.”

The Open Space Program is well coordinated on the state level. The 4 entities eligible for funding through the program are the Division of Parks and Recreation, the Division of Fish and Wildlife, the Division of Resource Management (Forestry), and the Division of Historical and Cultural Affairs. These agencies’ proposed projects are reviewed and discussed by an interagency working group consisting of staff from DNREC, Department of Agriculture, Department of State, Delaware Economic Development Office, Department of Transportation, Department of Administrative Services, and representatives from each county land use and parks departments. The Open Space Program is involved with many private and federal conservation partners also and these activities are coordinated on an ad hoc quarterly basis.

The Land Protection Act calls on the county governments to adopt and incorporate overlay zoning ordinances and environmental performance standards for lands included within designated state resource areas. The standards shall include, but not be limited to: (1)

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The Open Space Program

establishment of site design requirements that minimize the loss of open space and associated values of state resource area lands and (2) establishment of technically based specific environmental performance standards and design criteria.

DNREC's Strategic Plan sets a goal for the Open Space Program to protect of 2,000 acres annually. This progress is tracked at the quarterly Open Space Council meetings and reported annually. Additionally, under the Land Protection Act, the program is required to prepare a 5-year report on the status and accomplishments of the program.

Since the passage of the Land Protection Act in 1990, the Open Space Program has protected 43,286 acres of land at a total cost of \$209,552,908.



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Agricultural Lands Preservation

Delaware Agricultural Lands Preservation Foundation

The Delaware Agricultural Lands Preservation Program was formed with the adoption of House Bill 200 in July, 1991. It is the only official state program in Delaware that protects land for agricultural purposes. The Foundation is staffed by Department of Agriculture Planning Section employees and is administered by a nine member, bipartisan board representing a broad spectrum of interests. The farmland preservation program has demonstrated significant success in its short thirteen year history. Delaware's farm preservation program has the highest percentage of permanently preserved farmland in relation to our total land area than any other state in the nation.

Landowner participation in the program is voluntary and has two components. First, landowners join the program by creating an Agricultural Preservation District. An Agricultural Preservation District contains at least 200 contiguous acres devoted to agricultural and related uses. Any lands fewer than 200 usable (and contiguous) acres

within three miles of an established district can be enrolled into the program as a District Expansion. Landowners who place their lands into Agricultural Preservation Districts agree to not develop their lands for at least 10 years, devoting the land only to agriculture and related uses. In return, the owners receive tax benefits, right-to-farm protection, and an opportunity to sell a preservation easement to the state that keeps the land free from development permanently.

There are now 134,747 acres in 564 Agricultural Preservation Districts and District expansions in Delaware. Out of the 134,747 acres in agricultural preservation districts, 411 properties encompassing approximately 76,848 acres have been permanently protected through the purchase of preservation easements for \$90,523,212. In recent years, the funding source for this development rights purchases has expanded to include both local and federal matching dollars. All three Delaware counties now contribute financial resources to the foundation effort. Delaware has also been very successful in the capture of federal farm preservation dollars.

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Agricultural Lands Preservation

High quality soils, significant agricultural infrastructure, historical and environmental significance are all considered when selecting farms for easement purchase. Many of these farms are contiguous to already protected land and complement the state's open space preservation efforts by creating natural buffers between development and public open space. Thus far, the program has been successful in striking a balance between two important goals:

1. **Preserving a critical mass of crop land, forest land, and open space** to sustain Delaware's number one industry and quality of life,
2. **Providing landowners an opportunity to preserve their land** in the face of increasing development pressures and decreasing commodity values.

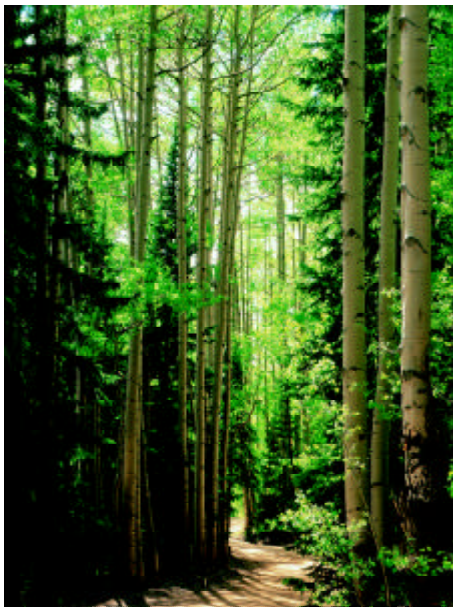


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Forest Legacy

The Forest Legacy Program (FLP) is funded through the U.S. Forest Service's State and Private Forestry (S&PF) budget and administered by the Delaware Department of Agriculture. It provides funds to states to protect working forestlands that are threatened by development or other land uses, either through outright (fee simple) purchase or conservation easements. A conservation easement allows the landowner to continue to own the forest; however, the easement prohibits non-forest uses such as development. Landowners who chose to sell an easement must also

have a forest stewardship plan for their property that describes the activities needed to help achieve their objectives for the property; the Delaware Forest Service can write this plan with the landowner. The intent of FLP is to ensure forestlands continue to yield the forest products we use everyday, such as timber, wildlife habitat, and water quality



protection. Landowner participation in FLP is completely voluntary.

States may only use Forest Legacy funds in areas designated in their Assessment of Need (AON) - the AON describes the state's forests, the threats to the forests, and those areas within the state that contain the most important forests, which are called the Forest Legacy Areas. Once the Secretary of the United States Department of Agriculture (USDA) approves the AON, the state is eligible to receive Legacy funds to purchase land and easements within the designated Forest Legacy areas.

Delaware's AON was approved in December 1998, and there are four Legacy areas in Delaware - White Clay Creek, Blackbird/Blackiston, Redden/Ellendale, and Cypress Swamp. These areas contain the highest concentrations of forests in Delaware, including significant acreage already protected through public and private ownership.

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Urban and Community Forestry

The trees in our cities and communities are a vital component of our green infrastructure as they provide a wide array of benefits including cleaner air and water, wildlife habitat, temperature moderation, and aesthetics. The Delaware Forest Service's Urban and Community Forestry Program provides technical assistance to cities, towns, developers, and homeowners to help manage and improve this important forest resource.

The Delaware Forest Service has two full-time foresters who assist cities, towns, and communities with the management and care of their urban forestry resources. These foresters are available to help communities develop management plans for their publicly owned forests (such as city or county parks, street trees, etc.) as well as conduct an inventory of, and a maintenance schedule for, these trees. Program staff also work with developers, planners, and engineers to help educate them on methods to preserve trees during the development process. The Department of Agriculture maintains

a list of certified arborists who are available for tree pruning and other tree care services.

Through a federal grant, the Delaware Forest Service also offers approximately \$80,000 each year to communities throughout the state for tree planting, tree care, and tree management projects on publicly owned lands. The local community must match these grants with either nonfederal funds or in-kind services (volunteer time, staff time, etc.).

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Growth and Water Quality

Clean and plentiful water supplies, for consumption, swimming, fishing, agriculture and aesthetics are critical to Delaware's continued prosperity, yet nearly all of our surface water bodies do not meet water quality standards. For the past five years or more, DNREC has been actively developing what are termed Total Maximum Daily Loads, or "TMDLs", a major strategic priority of the Department with respect to water quality. The Federal Clean Water Act requires States to develop these TMDLs for water bodies in which existing pollution control activities are not sufficient to attain water quality standards. A TMDL sets a limit on the amount of pollutants that can be discharged into a water body such that water quality can improve and the standards can eventually be met. Achievement of TMDL targets is in large part depends on where growth occurs and how we manage the water pollutants that accompany that growth.

DNREC is working with diverse groups of citizens and government agency representatives in the context of Tributary Action Teams to draft pollution control strategies to implement these TMDLs.

The availability of regional sewer systems, discharges from wastewater treatment plants, location and density of individual on-site septic systems, use of riparian buffers and other "better site design" principles, and the management of stormwater are all factors which impact our ability to achieve TMDLs. The following programs have been identified as having the potential to help direct growth and address our water quality issues:

- **Delaware Water Pollution Control Revolving Fund and 21st Century Fund/ Wastewater Management Account** – DNREC's Financial Assistance Branch directs water and wastewater investment to existing communities, urban concentrations and growth areas by evaluating and ranking all projects for consistency with Strategies for State Policies and Spending. The program addresses the goal of protecting the state's water supplies, open spaces, farmlands, and communities by encouraging revitalization of existing water and wastewater systems and construction of new systems.

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Growth and Water Quality

- **On-Site Wastewater Treatment and Disposal** – The Groundwater Discharges Section conducts site evaluations for the suitability of soils for on-site wastewater treatment and disposal systems.
- **Community and Large On-Site Wastewater Systems** – The Groundwater Discharges Section conducts site evaluations for large and community wastewater treatment and disposal systems.
- **Sediment and Stormwater Management** – This program regulates land development activities by ensuring that land disturbing activities are done in accordance with sediment and stormwater regulations. The program also provides technical assistance through locally delegated agencies.
- **Land Application of Wastewaters (Spray Irrigation)** – The Groundwater Discharges Section issues permits to wastewater treatment facilities which use agricultural land for final application of the reclaimed water.
- **National Pollutant Discharge Elimination System (NPDES)** – The NPDES program works to control pollution from activities that affect the quality of surface and ground water for direct discharges.



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Growth and Air Quality

Another critical environmental issue directly impacted by growth and sprawl is clean air. Delaware has a serious problem with ground level ozone and is in violation of the federal ozone standard. The 1990 federal Clean Air Act Amendments contain provisions for the attainment and maintenance of the National Ambient Air Quality Standard for ozone and prescribe certain actions we must take to achieve the standard and consequences should we fail to meet it. The Act's provisions aside, clean air is important for the health and well being of Delawareans and is a critical requirement for our continued growth and prosperity. Growth and prosperity, however, also make air pollution problems worse. More people and more sprawl translates into more air pollution; from cars, energy generating facilities, lawn mowers, boats, leaf blowers and the trappings of prosperity. Attainment of the ozone standard will require that we try to minimize air pollution by directing growth into areas that will allow us proximity to employment centers, schools and recreational facilities, that will provide access to a variety of transportation modes, and

that will generally minimize ozone formation. Several program enhancements contained in this plan address our clean air goals.

- **Local Air Quality Impact Analysis** – The Air Quality Management Section is working to better incorporate air quality impacts of development in local land use decision-making.

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Growth and Water Supplies

Water supply is another overarching and serious concern for Delaware as we plan for future growth.

Maintaining adequate water supply capabilities for domestic consumption, industrial use, habitat and fisheries protection, and agriculture, especially during times of drought, has been a challenge for Delaware. Increasing population puts additional pressure on limited resources and sprawl puts even additional strain on distribution and treatment infrastructure. Protection from contamination and a thorough understanding of the occurrence and

availability of our state's limited resources are critical to maintaining a Livable Delaware.

- **Source Water Assessment and Wellhead Protection** – The passage of SB119 in June 2001 created the Source Water Protection Program to protect the sources of water for public drinking water systems. The law requires that local ordinances be developed to protect wellhead areas and good and excellent recharge areas.
- **Water Supply Planning** – Directing growth into urban and developing areas requires that the necessary services such as water, sewer, and electric are available and dependable.



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Growth and Land Management

DNREC either owns, maintains leases, or in some manner preserves a great deal of land, either by purchasing it or through conservation or other easements. In most cases, DNREC's land holdings amount to permanent preservation and removal of those lands from the pressures of development. This is a straightforward technique to directing growth, however, it is not the only means, and it is costly. Private land owners, conservation-oriented organizations and other units of government have done much to remove land from the development picture. More land will inevitably be purchased or protected by these means, and additional resources will be required. Other avenues for redirecting growth and preserving natural areas and allowing for more informed decisions may be enhanced through the following means:

- **Brownfield/Voluntary Cleanup Program (VCP)** – The redevelopment of contaminated commercial and industrial sites is a tool that can be used to promote growth management and sustainable development principles. By redeveloping brownfields, we relieve some of the pressure to develop greenfields.
- **Conservation and Preservation Easement Program** – Government bodies, charitable corporations, or trusts may acquire property to retain its natural, scenic, or open space values. The program focuses on consolidation of open spaces into larger, contiguous units within new, adjoining developments.
- **Open Space Program** – As stated previously, the Open Space Program provides a mechanism for the State to acquire land for recreation and conservation purposes.
- **Delaware Land and Water Conservation Trust Fund Grants for Park Acquisition and Development and Greenways and Trails** – This provides an annual source of funding to counties and municipalities for acquisition and development of parks and greenway corridors.
- **Freshwater Wetlands** – Wetlands are one of the most productive environments and provide a host of benefits, including filtering pollutants from

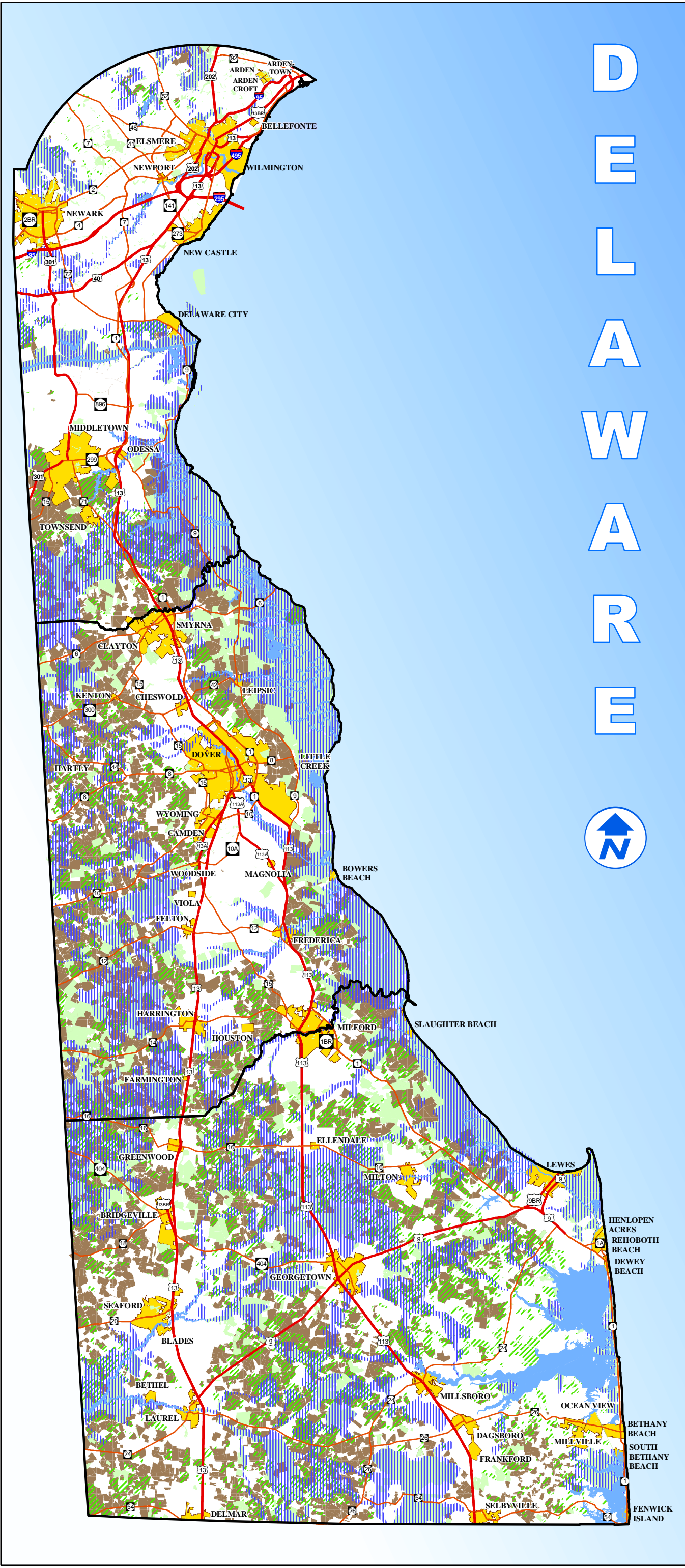
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Growth and Land Management

the water, providing protection from flooding, and supplying wildlife habitat. In particular, certain isolated freshwater wetlands in Delaware, such as Delmarva Bays, white cedar swamps and dune swale wetlands are especially vulnerable to the impacts of growth and sprawl. The State is looking for ways to protect and manage the highest valued freshwater wetlands.

A complete description of these programs can be found in DNREC's Livable Delaware Implementation Plan at <http://www.state.de.us/planning/livedel/details.htm>.





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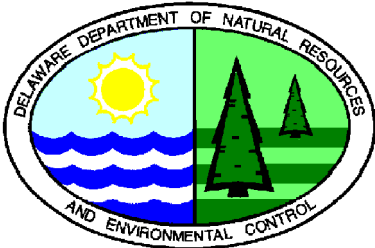
GREEN INFRASTRUCTURE OF DELAWARE

All Focus Areas

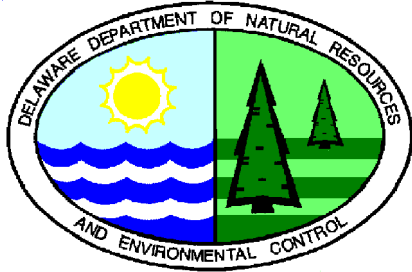
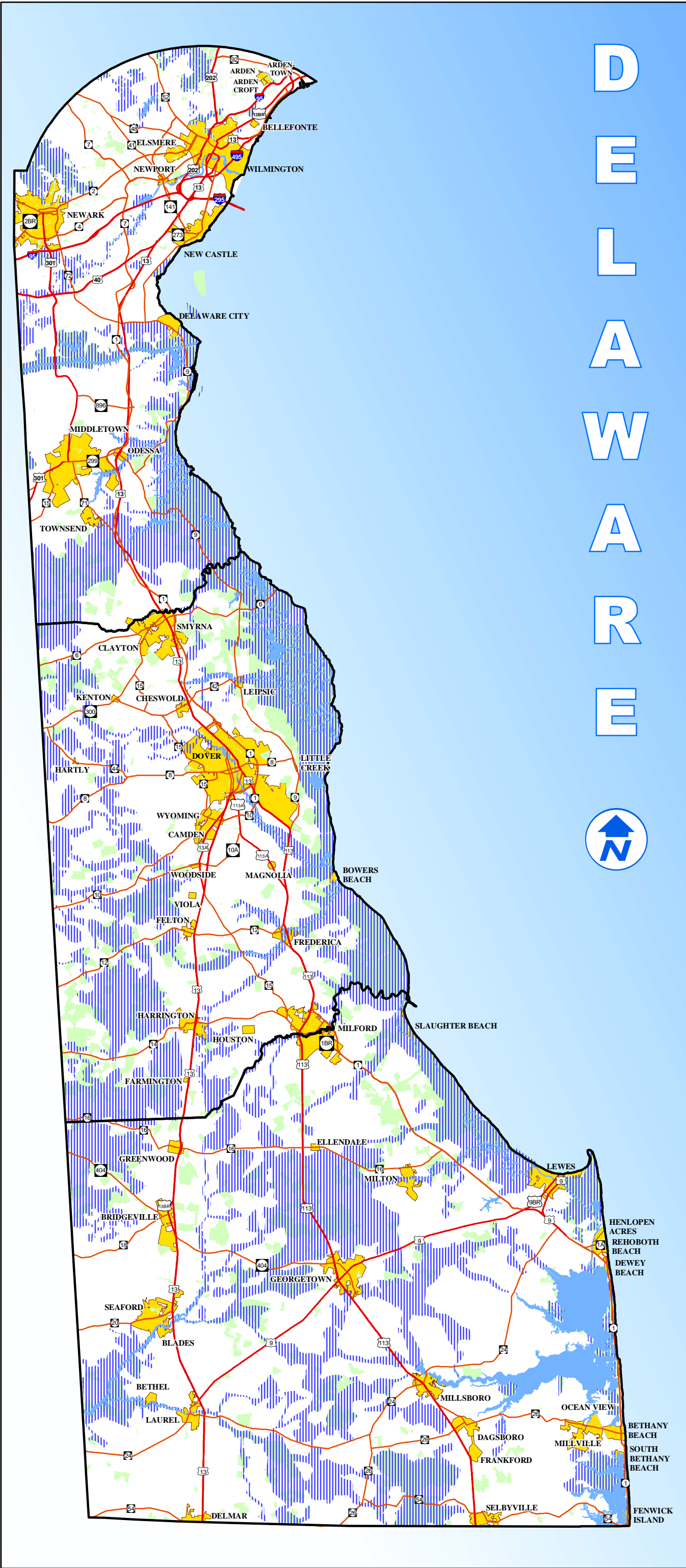
MARCH 2004

LEGEND

- CROPLAND
- FORESTLAND
- NATURAL RESOURCES
- PRESERVED LANDS
- INCORPORATED MUNICIPALITIES
- WATER



- The Cropland layer depicts the highest ranking 50% of the remaining unpreserved parcels with cropland that occur outside of state designated growth areas. This data was derived through use of the nationally recognized Land Evaluation Site Assessment system. This mapped data should be reviewed in conjunction with the text Livable Delaware Advisory Council approved "Green Infrastructure Strategy."
- The Forestland layer depicts the highest ranking 50% of the remaining unpreserved parcels with forestland that occur outside of state designated growth areas. This data was derived through use of the nationally recognized Land Evaluation Site Assessment system. This mapped data should be reviewed in conjunction with the text Livable Delaware Advisory Council approved "Green Infrastructure Strategy."
- This layer identifies a network of ecologically important natural resource lands of special state conservation interest. Generally, it depicts corridors of the largest, most connected natural habitat throughout the state, including forests, uplands and wetlands. It was derived through interpretation of the most important known rare species sites, existing protected lands, 1997 statewide aerial photography, regional ecological evaluations by the USF&W Service, The Nature Conservancy, and the Delaware Natural Areas, Natural Heritage, and Open Space Programs. The lines on the map must be considered on the basis of the scale at which they are shown and the data from which they were derived. The lines are not parcel based, nor are they exact, but a close approximation.




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Natural Resources and Recreation Land Focus Areas

MARCH 2004

LEGEND

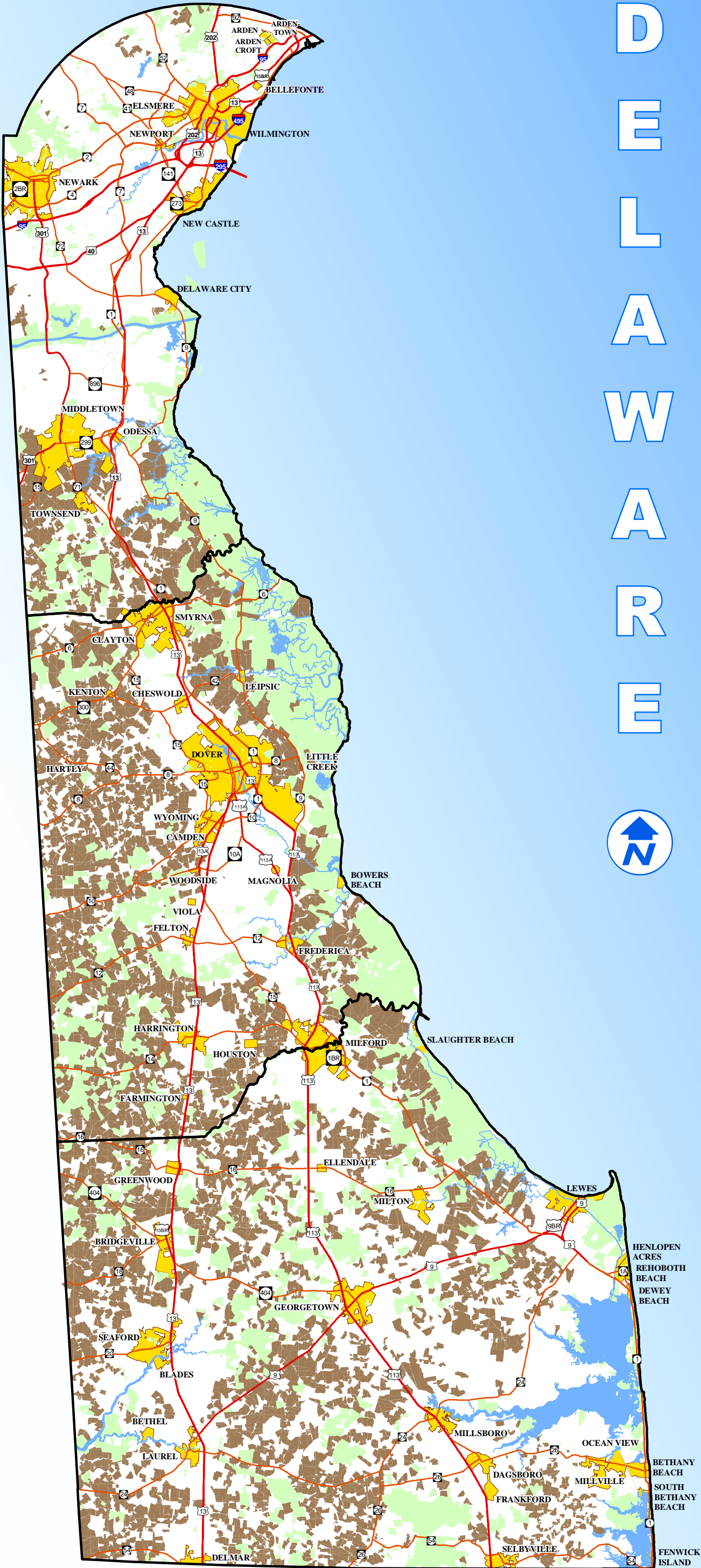
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• This layer identifies a network of ecologically important natural resource lands of special state conservation interest. Generally, it depicts corridors of the largest, most connected natural habitat throughout the state, including forests, uplands and wetlands. This map was developed through the application of generally accepted principles and practices of ecology, and represents knowledge at the time of production. It was derived through interpretation of the most important known rare species sites, existing protected lands, 1997 statewide aerial photography, regional ecological evaluations by the USF&W Service, The Nature Conservancy, and the Delaware Natural Areas, Natural Heritage, and Open Space Programs. The lines on the map must be considered on the basis of the scale at which they are shown and the data from which they were derived. The lines are not parcel based, nor are they exact, but a close approximation. The scale of this map image is set for general display purposes only and is inappropriate for evaluation of the ecology at individual sites. Persons needing more detailed information are directed to contact the DNREC Natural Heritage Program or Natural Areas Program offices for assistance.

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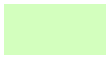




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Cropland Focus Areas

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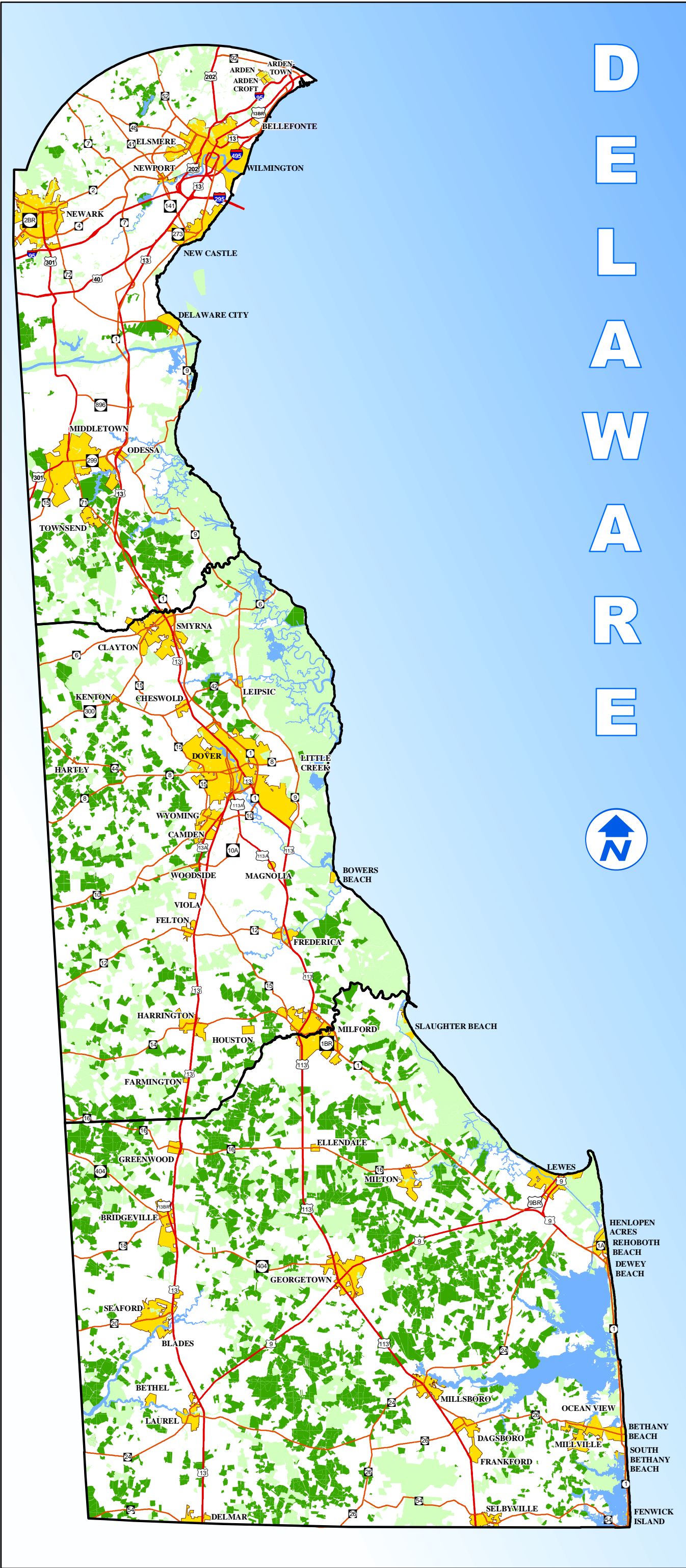
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-  WATER

■ The Cropland layer depicts the highest ranking 50% of the remaining unpreserved parcels with cropland that occur outside of state designated growth areas. This data was derived through use of the nationally recognized Land Evaluation Site Assessment system. This mapped data should be reviewed in conjunction with the text of the Livable Delaware Advisory Council approved “Green Infrastructure Strategy.”

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Forestland Focus Areas

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LEGEND

- ◆ FORESTLAND
- PRESERVED LANDS
- INCORPORATED MUNICIPALITIES
- WATER

◆ The Forestland layer depicts the highest ranking 50% of the remaining unpreserved parcels with forestland that occur outside of state designated growth areas. This data was derived through use of the nationally recognized Land Evaluation Site Assessment system. This mapped data should be reviewed in conjunction with the text of the Livable Delaware Advisory Council approved “Green Infrastructure Strategy.”

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